

REMOTE STORAGE

Echinococcus Cyst of the Liver

WITH REPORT OF A CASE WITH OPERATION
AND RECOVERY

BAYARD HOLMES, M.D.
CHICAGO

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ECHINOCOCCUS CYST OF THE LIVER,

WITH REPORT OF A CASE WITH OPERATION AND
RECOVERY.

BAYARD HOLMES, M.D.

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There are two forms of hydatid cyst which show themselves in the human liver. The more common one is the *Echinococcus cysticus*; the rare one is the *Echinococcus alveolaris*. The life history of the *Echinococcus cysticus* has been very fully studied by Leuckart, and further studies may be consulted in Bulletin 19 of the Bureau of Animal Industries of the United States Department of Agriculture, published in 1898.

LIFE HISTORY OF THE PARASITE.

The position of the echinococcus cyst in the life history of the animal is extremely interesting. A tapeworm (Fig. 1) only 1.5 to 3.0 mm. long, which infests the intestinal tract of the dog and other canidæ, deposits its eggs by millions with the excreta. By natural processes the eggs are washed out of the excreta and fall on vegetation, which sooner or later becomes the food of man or other intermediary host, mostly the herbivora. In the intestinal tract of the host a few of the eggs are so acted on by the contents of the stomach or intestines that the shell falls off and the embryos gain access to the circulating juices of the body. Either actively or passively they are carried through the portal circulation and reach the finer capillaries of the liver. Here they develop into enormous cysts, which by a complex system of budding (Fig 2) become multiple embryos. On account of the presence of the cysts, the intermediary host suffers in health and strength, and is, therefore, more easily overcome and devoured by the primary host, the dog or other canidæ. The dog

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consumes the infected liver; the embryos are set free and attach themselves to the lining membrane of the intestine by the hooklets with which they are provided. Here they become messmates and perhaps parasites of the dog, and complete the circle of their existence by a bisexual development and the discharge of millions of eggs in the excreta.

GEOGRAPHICAL DISTRIBUTION.

The geographical distribution of echinococcus is extremely interesting. It is a common affection of dogs and men in Iceland, some parts of Australia, and in the Provinces of Mecklenburg and Pomerania. In the neighborhood of Greifswald 68 per cent. of the cattle, 51 per cent. of the sheep, and 5 per cent. of the hogs are, according to Piper, afflicted with the echinococcus disease. In France, England, and other European countries; in Algiers and Egypt, the echinococcus is occa-

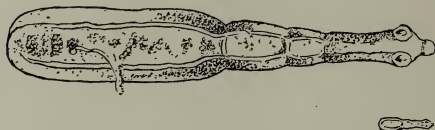


Fig. 1.—The tapeworm of the dog, one-half natural size and magnified.

sionally observed (Fig 3). In America only one infected dog has ever been found. Some few imported cases have been recognized in men, and a few so-called sporadic cases. In northern Michigan, Minnesota, the large cities, and in the Province of Manitoba, the disease has been recognized in immigrants from Iceland, Mecklenburg and other European countries. Fifty-nine cases have been reported from New York, 56 from Manitoba, 24 from Pennsylvania, 13 from Maine, 9 from Ohio, something like 250 in all.

CLINICAL HISTORY.

More than half of all echinococcus cysts are found in the liver. They are usually single, and more often appear in women than in men. They usually occur between the ages of 20 and 40, though children and those of advanced years occasionally suffer. In the liver the cysts are more often in the right lobe than else-

where. The form of the liver is changed to correspond with the location of the cyst, with its size, and the rapidity of its growth. The position of the cyst may sometimes be recognized by the bulging of the liver, either toward the diaphragm, downward into the abdomen, or in some other direction. Rarely the cyst may obstruct the biliary passages, and thus produce jaundice or partial jaundice; sometimes it produces pressure on the vena cava, sometimes on the portal vein and sometimes on the blood supply of the liver itself, producing gangrene. As a result of pressure atrophy, the cyst advances in one direction or another, and occasionally opens into the general peritoneal cavity, or some viscus, into the pleural cavity, into the pericardium, and even into the pelvis of the kidney. Rarest of all, it breaks through the skin of the abdominal wall.



Fig. 2.—Different methods of budding (from Leuckart).

Traumatism may result in early rupture of the cyst, and this again in death. At other times the same accident may bring about the recovery of the patient and the cure of the disease.

Suppuration sometimes takes place in the cyst and produces abscess of the liver. The cyst frequently dies, and its contents, being sterile, undergo the ordinary changes which are to be found under like conditions in cysts of other origin. There are no complications which occur in abscess of the liver which may not occur in echinococcus cyst.

SYMPTOMS AND DIAGNOSIS.

The symptoms of hydatid cyst of the liver are so indistinct that the tumor is frequently the first suggestion of the disease. Cysts as large as the fist are often latent and unsuspected. There are no abnormalities which can be recognized in the urine. The absorption of toxic

elements occasionally gives rise to urticaria and digestive disorders, especially to a repulsion for meat and fatty foods. This is sometimes so severe as to produce vomiting or diarrhea. Psychoses of various forms often show themselves in the course of echinococcus disease, but the only one which is frequent enough to be of diagnostic significance is the urticaria. The gastric disorders may be either psychic in their origin, or they may be due to interference with the biliary secretion, or to the movement of food in the duodenum by pressure.

The patient usually complains of fulness and heaviness and sometimes of pain and pressure in the region of the liver. Jaundice occasionally shows itself in the mild form, and the stools are interruptedly clay-colored

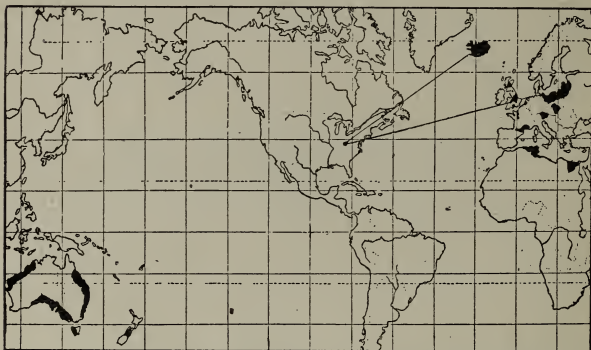


Fig. 3.—Portion of map of the world showing the limited distribution of *E. cysticus*.

and stained with bile. The liver, as a whole, is somewhat enlarged, and the location of the tumor may give an irregularity suggestive of abscess or carcinoma. The hydatid thrill which has long been recognized is not often observed even in the presence of large hydatid tumors, and it is sometimes present when the tumor is located in the omentum, mesentery or pancreas. Abscess of the liver also occasionally presents the thrill. This test is made by laying the left hand over the tumor and lightly tapping the opposite side of the tumor with the fingers of the right hand, the fingers being retained quietly in position for a few minutes after the tap is made. A peculiar vibration is felt somewhat resembling the vibration of a violin under a very low tone. The

examination of the blood is not significant. There is a mild anemia, which progresses with the continuance of the disease and is increased by interference with the biliary or digestive function. Only a small proportion of cases of hydatid are diagnosed before the autopsy.

NARRATION OF A CASE.

In my own practice I have seen three hydatids. Two were on the postmortem table at Cook County Hospital; one in an Icclander, and one in a German of unknown nativity. Both were hydatids of the liver and both were unrecognized before death. The third case is one in which the diagnosis is perhaps a little obscure. The conditions found at the operation would indicate that the hydatid was dead and sterile, and was undergoing a degenerative change. The history of the case was carefully written before the operation, and is of sufficient interest to be reproduced:

Painful affection of the hips, extending over two years, in an American girl of German parentage; appearance of a tumor or enlargement of the liver; under observation for four months; exploratory laparotomy; removal of a dead cyst and evacuation of a large sterile cyst; recovery.

Previous History.—Nov. 28, 1902, Miss D., 20 years old, born and reared in northern Illinois, was placed in my charge by Dr. Robert H. Babcock. She gave the following history: When a child she was very ill a number of times with the croup, and she also believes that she had measles; her girlhood was generally healthy, and she was of vigorous bodily habit. Twice she has had a condition which was diagnosed la grippe; once in 1893, and again in February, 1902. This last time she was very sick for about ten days. During this attack an eruption appeared on her shoulders, hips and knees, which faded out during early convalescence (urticaria?). She has suffered acute tonsillitis once, and last winter she had a so-called facial eczema which ran a course of about five weeks (urticaria?). Three years ago and without apparent cause, she suffered from nervous prostration. A few years ago, when run down in health, she had a few fainting spells that lasted only a few minutes each, and she insists that she was not hysterical at the time. She suffered for several years with headaches, which disappeared on wearing suitable glasses. She has never at any time had chills or fever. At thirteen she began to menstruate, but this function has not always been regular, and when irregular has been too early. For the last year menstruation has been regular. In October she menstruated a week late, and after that time she did not menstruate until

the first week of March following her operation. Her menstruation is normal, with no great amount of hemorrhage, no pain or psychic disturbance, and she does not go to bed.

Family History.—Her family history is splendid. Her parents were German born; her father died from an overdose of morphin; her mother, 56 years old, is in good health. She has three perfectly developed brothers, and there have been no deaths among the children in the family. No close or distant relatives have died from tuberculosis or cancer.

When a child she played with a little girl suffering from a suppurating middle ear, but she does not remember having lived in the house or associated with any one who had consumption or a running sore. She never played with a dog or had a pet except once when a girl. It was a white, shaggy poodle, and she had it for not more than a year or a year and a half. The house in which she has lived most of her life is isolated and not overhung by trees. Her room was on the second floor, with two south and one west windows. The water supply of the house was a well of very hard water. While away at school she was in a pleasant room, abundantly lighted and supplied with water from a well. The school was situated on high and well-drained land.

History of the Disease.—Four or five years ago, about 1898, she began to have pain in the left hip; this pain did not make her limp. She consulted Dr. John C. David, Sandwich, Ill., who treated her for a year and then took her to Dr. George F. Shears, Chicago, who considered the trouble due to some disturbance in the pelvic circulation. In the spring of 1900 she made a tour of several months in Europe. She stopped at Bremen, Einbeck, Hanover, Frankfort, Strassburg, Lindau and Berlin. While in Germany she often walked three or four miles a day, but had no pain in her hip. She sometimes had pains radiating from the knee to the ankle and up around her back. She returned from Europe in the fall of 1900 feeling quite well, and had no further trouble until the spring of 1901, when the pain in her hip returned very suddenly one afternoon. Rubbing the hip and leg with alcohol seemed to relieve her suffering, but in two or three weeks the pain had extended into the knee and ankle and had become so constant and severe that she called Dr. L. L. Culver, Sandwich, who put her in the care of Dr. A. J. Ochsner early in September. Dr. Ochsner diagnosed tuberculosis of the left hip, and put her to bed at the Augustana Hospital with extension on the left leg. At the end of a week she began to suffer severe pain in her right hip, and extension was placed on this leg also. She remained in the Augustana Hospital for four weeks with extension on both legs. She was then removed to her home and the extension was continued six weeks longer. The extension was then removed from both legs and she was kept in bed for

a month. After some preliminary treatment a splint was applied to the left leg and she began to walk with crutches. The extension and the rest in bed had relieved the pain in the hips, and when she began to walk she complained of nothing except weakness in both hips.

In February, 1902, she had an attack of la grippe, with urticaria and a slow convalescence, after which she abandoned her crutches and began to walk with a cane. In July, 1902, she again had pain in the left hip, which was greatly relieved by rubbing the leg with alcohol. On admission to the hospital she had occasional slight pains around the left hip, which she said were not deep. She had had no pain in the right hip since the extension was taken off. She walked gracefully and without limping.

About the middle of September, 1902, she returned to her school at Naperville, Ill. She felt quite well and gained ten pounds in weight during the five or six weeks she was there. Late in October, however, she noticed a swelling on the right side of the abdomen above the umbilicus, which seemed to her to increase slowly and regularly in size and outline. While taking deep-breathing exercises she noticed considerable pain in the region of the liver. For two or three months previously she remembers that she had difficulty in digesting potatoes and other vegetables, and was constantly distressed after eating by the fermentation of her food and the formation of gas in her stomach. The very sight of meat and potatoes, white bread and ordinary articles of diet, disgusted her, but she enjoyed thin soups, fruit, candy and ice cream. She was inclined to be constipated, but after she had eaten and had eructated gas from her stomach her bowels would move very loose and watery. For a few days in October she remembers that her feet were swollen early in the morning. During the months of October and November she had pain over the region of the gall bladder and liver and in the muscles of the back. This pain radiated to a spot in the neighborhood of the fourth right rib behind, sometimes rising into the shoulder and extending to the left shoulder when lying down. Late in October, 1902, she consulted Dr. Culver, Sandwich, who made out a great enlargement of the liver, but she nevertheless returned to school. After this she became slightly jaundiced and was greatly depressed in spirit. November 24 she consulted Dr. Robert H. Babcock, who placed her in my care.

Examination.—The patient is found to be a young woman of perfect and beautiful development, with dark brown hair and dark gray eyes. Her skin and conjunctivæ are of a yellowish color, which is especially noticeable in the morning. She is five feet five inches tall, and weighs 120 pounds. She is well nourished; the skin is moist, and there is a slight edema of the lower extremities. The cubital and axillary

lymph glands are not recognizable, but there are a few palpable lymph glands in the neck. The examination of the eyes, nose, mouth and ears reveals no abnormalities. The right lung extends downward to the upper border of the fourth rib in the mammary line, the fifth rib in the axillary line, and the seventh rib behind. The left lung extends to the lower border of the third rib to the left of the sternum, the sixth rib in the axillary line, and the ninth rib behind. Over this area the respiratory and vocal sounds are normal, and there are no evidences of consolidation, effusion or disease.

Cardiac dullness begins in the fourth interspace about three-quarters of an inch to the left of the mammary line; there is no cardiac dullness to the right of the sternum. It extends to the lower border of the second rib on the left of the sternum, to the upper border of the third rib in the mammary line. The apex beat is in the fourth interspace just external to the nipple; both tones are loud and distinct. Over the base of the heart the second tone is markedly accentuated.

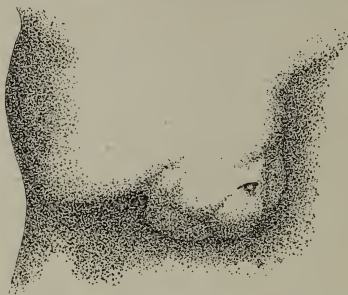


Fig. 4.—Showing outline of tumor on the right side of abdomen as sketched before operation.

The area of relative dullness of the liver begins in the third interspace in the mammary line, and absolute flatness begins at the lower border of the fourth rib in the mammary line, at the lower border of the fifth rib in the axillary line, and the lower border of the seventh rib behind. The edge of the liver is palpable below the costal arch and extends as low on the right side in the mammary line as the level of the umbilicus. It is just above the umbilicus in the median line, and extends across the abdomen to the level of the tenth costal cartilage. The anterior surface of the liver is smooth and uniform, dense and unyielding to pressure, and without fluctuation or any marked irregularity. The edge is distinct and round, and the notch of the liver is distinctly palpable. At a subsequent examination a few days later a distinct, irregular tumor was recognized and the accompanying sketches were made to represent it. (Figs. 4 and 5.)

The gall bladder, unless the tumor above is the gall bladder, is not palpable. The left lobe of the liver extends as far as the left axillary line and as high as the sixth rib; it seems to completely fill the left hypochondriac region. The spleen is not palpable as a separate mass to the left of the liver. No fremitus or thrill can be felt on palpation anywhere over the surface of the liver, nor can any friction sound be detected on auscultation. There is a marked bulging above the umbilicus and a little to the left of the middle line. There is no tenderness over the liver on moderate pressure; no enlargement of the veins of the abdomen or groin; no enlarged lymph glands about the umbilicus. The abdomen measures 31 inches at the ensiform cartilage; $30\frac{1}{2}$ inches at the umbilicus.

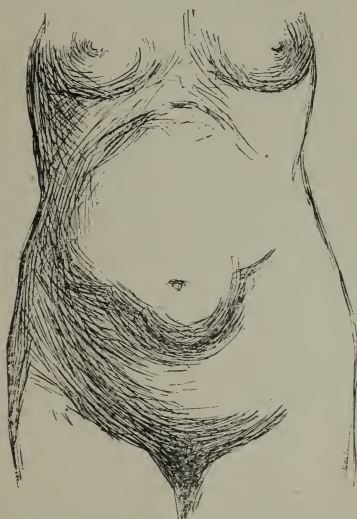


Fig. 5.—Sketch of abdomen showing the general configuration and outline of tumor.

and midway between these points, over the most prominent protrusion of the tumor, $30\frac{1}{4}$ inches. The distance from the ensiform cartilage to the umbilicus is eight inches.

The area of stomach resonance extended downward to the level of the umbilicus, and toward the left to the border of the tenth rib, about two inches lower than the palpable edge of the left lobe of the liver. The stomach contents were not examined. The right kidney was not palpable, and only at times could a suggestion of the lower pole of the left kidney be made out. There was no tenderness over the appendix or any other part of the abdomen.

The examination of the pelvis revealed a perfectly normal

virgin sexual apparatus, and cystoscopy showed a perfectly normal bladder. The veins of the legs were not enlarged; there were no hemorrhoids; the nails on the fingers and toes were unmarked by ridges, the evidence of malnutrition, and were perfectly smooth and pink. There was no disease of the skin or hair anywhere on the body.

When the patient entered the hospital November 26 her temperature was 98, at 10 o'clock in the morning, her pulse 100 and her respirations 24. An examination of a specimen of urine gave an acid reaction, a cloudy appearance, a straw color, a specific gravity of 1010, with no albumin, sugar or casts, and only a few squamous epithelial cells, a few leucocytes and an abundant deposit of crystals of oxalate of calcium. During the following week her temperature varied between 97.5 and 99.5, with no noticeable character in its fluctuation. The pulse was regular, even and varied between 72 and 88. Her respirations when recorded were in the neighborhood of 20.

A number of complete urinary analyses were made, but they revealed nothing significant. November 30 she passed 1,000 c.c. of urine in 24 hours, of a specific gravity of 1006, an acid reaction, a trace of albumin present, but no casts; total solids were 13.2 gm., and the urea 7 gm. in 24 hours. December 3 another specimen of urine was examined. It showed an acid reaction, but only .3 per cent. of urea. On this day the ureters were catheterized. The left ureter gave $7\frac{1}{2}$ c.c. of urine in 30 minutes, which would amount to 360 c.c. in 24 hours, making the total quantity for the two ureters 720 c.c. The urine from the left ureter was acid; it contained .3 per cent. of urea, no casts, no epithelial cells or abnormal microscopic findings. Following this catheterization she passed 9 c.c. of urine from the bladder at 2:30 p. m. This urine is presumed to have come from the right ureter. The characteristics were the same as those above. At 3:30 p. m. she passed 25 c.c.; at 4:00 p. m. 50 c.c.; at 6:30 p. m. 90 c.c. Every specimen of urine passed after the catheterization was slightly bloody, and had a specific gravity of 1010.

The catheterization was made with the Lewis electric cystoscope, the bladder being distended with air. By some mistake the right catheter was passed into the left ureter, which made it impossible to go on with the operation and pass the left catheter into the right ureter. The cystoscope was therefore withdrawn, and as the demonstration of the competency of the kidneys was complete, no further effort was made at catheterization. The blood in the last specimens was doubtless from the slightly overdistended urethra.

Frequent examinations were made of the blood; on December 2 one count made by Dr. Adams showed 5,160,000 red corpuscles; 7,800 white corpuscles, and a Fleischl hemo-

globin percentage of 75. This was almost identical with the first count of November 29. December 22 the red corpuscles and the hemoglobin remained the same, but the leucocytes numbered 12,000 to the cmm.

The enormous enlargement of the liver and the findings which are reported above were inconsistent with any probable diagnostic hypothesis which occurred to me. The afebrile course, the low leucocytosis, the lack of prostration or toxemia, spoke strongly against abscess of any kind, except possibly tuberculous abscess or abscess due to the typhoid bacillus. Any abscess which would give rise to so little disturbance must necessarily be very chronic, or else within a natural cavity of the body. The uniform enlargement of the liver would be unexplained by an empyema of the gall-bladder, neither would it be consistent with abscess of the liver itself, or even with the improbable echinococcus of the liver. The history of pain in the hips, giving rise to the erroneous diagnosis of hip-joint tuberculosis, might possibly indicate the origin of the tumor affecting the sacral nerve. These nerves probably arise from the second, third and fourth lumbar, and the second and third sacral nerves. The history of the case and the general appearance of the patient seemed to speak against the diagnosis of malignant disease, and there is nothing in the history which points strongly either to carcinoma or to sarcoma.

After writing out the above indication and feeling the uncertainty of the diagnosis, I thought it prudent to send the patient home and give her the advantage of a therapeutic test for syphilis of the liver. She was accordingly put under the immediate care of Dr. Culver, Sandwich, and given an eighth of a grain of corrosive sublimate hypodermically every day for ten days, and twenty grains of the iodid of potassium in milk or beef tea three times a day. During her stay at home, she maintained a temperature between 102 and 103 every evening except one, and this evening she was more miserable than at any other time. Her morning temperature was regularly sub-normal.

On December 19 she returned to the hospital. The girth of the abdomen immediately over the tumor had diminished one and a half inches. The notch and irregular spot on the edge of the liver had increased to the size of the fist, and was excessively tender. December 21 she was again carefully examined by me and Dr. Bertram Sippy, but no new points were brought out by our study together. He recommended an exploratory operation, probably for a suppurative cholecystitis. The leucocytes now numbered 12,000; the tempera-

ture remained permanently above normal; the urinary secretions showed an excessive amount of coloring matter, probably bile pigment, and a little albumin and peptones.

Operation.—The patient received the usual preparation for a laparotomy, and on the morning of December 22, with the assistance of my associates, Drs. Frank Blatchford, Edward T. Alford and Will H. Moore, I made the operation. The anesthetic was nitrous oxid gas, followed by chloroform, and afterward, at 11:30, by ether, and was administered by Dr. D. H. Galloway. After the preparation of the skin of the abdomen, the abdominal wall was opened and the tumor discovered at 11:15. The protrusion which had been felt in the neighborhood of the umbilicus was found to be a hard, white, superficial tumor in the border of the liver near the fissure. Behind this tumor there was a large fluctuating tumor in the right lobe of the liver and an inch and a half or two inches from the smaller tumor. An incision was made in the larger tumor, and a clear, yellowish-green fluid poured out. The cyst seemed to hold about a quart of fluid. The finger was passed into the incision, and by means of several mattress sutures, passing from the outside of the liver to the inside of the tumor, a triangular piece of liver substance, containing the smaller tumor, was ligated off with catgut, and a segment of liver, three and a half inches or more on each triangular side, was removed. There was very little hemorrhage from the surface of the liver; the interior of the cyst was carefully sponged out; the whole cyst cavity and the denuded surfaces of the liver were covered with an iodoform gauze tampon, which was brought out of the upper corner of the wound, and after exploring the gall bladder and common duct the pancreas and the pylorus, the remainder of the abdominal wound was closed. The skin suture was complete at 12:20, and the operation lasted an hour and five minutes after the first incision was made.

Immediately after the operation the tumor was carefully examined, and the sketch (Fig. 6) of the relation of the tumor, the cyst and the gall bladder was made.

Examination of the Cyst.—The material removed from the cyst and the tumor were placed in the hands of Dr. H. Gideon Wells for examination, who made the following report: "The specific gravity of the fluid taken from the large cyst was not recorded. It was golden brown, slightly opaque and rich in bile pigment and albumin. It contained considerable detritus, a few red blood cells, a moderate amount of cholesterolin crystals, but no echinococcus hooklets and no sugar.

"The wall of the large cyst when examined from within outward consisted of three layers. The first layer was old fibrous tissue, partially hyaline and partially degenerated, poor in nuclei, devoid of leucocytes, almost avascular and

without a lining epithelium over its surface. The second layer consisted of a broad, richly vascular zone, consisting of a network of widely dilated capillaries with a few or no arterioles. The capillaries were separated by a homogeneous material, which for the most part was not nucleated. The character and distribution of the capillaries suggested that they were the original capillaries of the lobules of the liver. The intervening tissue had the disposition of liver cell cords. It is probable that either the liver cells themselves had undergone hyaline degeneration, or they had been substituted by connective tissue, which later suffered the same change. A few groups of well preserved liver cells and bile ducts occurred in this zone. The third layer consisted of a promiscuous mass of fibrous tissue, liver cells, bile ducts, and the vessels normal to the liver, but without lobular structure. Liver cells occurred in small groups and small cords. A good deal of young connective tissue, granulation tissue and bile ducts surrounded

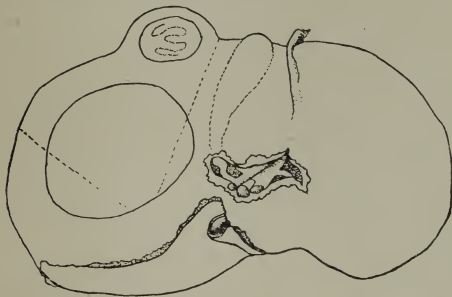


Fig. 6.—Diagram of section of liver showing lines of incision for removal of cysts.

by concentric layers of connective tissue filled up the picture.

"The small cyst consisted of thick, lamellated and corrugated sheets of hyaline substance having the consistency of cartilage. Between the folds of these sheets was a white, amorphous, pulpy substance, which consisted principally of fat, calcium salts, cholesterin crystals and detritus. The cartilage-like substance did not give any albumin or sugar reaction. Microscopically the thick sheets appeared hyaline and lamellated. The capsule was thick, composed of adult fibrous tissue and surrounded by liver substance containing much increased amount of fibrous tissue. No hooklets were found in the cyst.

"In the liver tissue surrounding the cysts there was a great production of interlobular tissue, with much granulation tissue. The lobules were atrophied almost to one-half their normal extent. There was no pronounced growth of fibrous tissue within the limits of the lobules themselves.

The bile ducts were surrounded by concentric layers of fibrous tissue. There was active congestion of the liver, with increase in the number of bile ducts, but no fatty degeneration or infiltration. The diagnosis was echinococcus cysts, with early surrounding cirrhosis of the liver."

Postoperative History.—After the patient was removed to her room she reacted promptly, and had the most trifling disturbance from the anesthetic and the most insignificant shock from the operation. Her temperature never rose above the most trifling reaction; she never had any albumin in the urine, and the quantity of urine rapidly increased. The bowels moved without disturbance, and the jaundice disappeared. The thick, loggy, old-aged look which she had before the operation, and the jaundice which was so evident in the scleræ and skin, quickly disappeared, and she took on a youthful rosy, healthy look, which caused everyone to exclaim. She had a moment's chloroform anesthesia when the deepest portion of the tampon was removed on the seventh day, but otherwise she was dressed without pain or discomfort, and the cavity closed and the wound healed in a remarkably short time. No urticaria followed the operation.

Since leaving the hospital on the last of January she has been active and in buoyant spirits. Her health and complexion were perfect in June, 1903, when last seen by me, and she has absolutely no evidence or hint of a return of the disease. She has menstruated regularly since the first week of March. In June, 1903, her waist measured $23\frac{1}{2}$ inches and she weighed 122 pounds.

TREATMENT: PROPHYLACTIC AND SURGICAL.

The treatment of echinococcus cyst is a matter of little immediate importance to the American physician. All association with dogs, however, especially with imported dogs, should be looked on as not unattended by dangers. The presence of dogs in and about truck farms and gardens, about grocery stores and kitchens must be looked on as dangerous and filthy. America can hardly hope or expect to remain free from the echinococcus for any great length of time, and when the disease is once discovered it should be promptly reported and the source of the disease should be sought for.

Medical treatment is absolutely useless. The only surgical treatment is laparotomy, the opening and the evacuation of the cyst, and probably tamponade and drainage; but these details are matters which must be left entirely to the surgeon. No exploratory puncture, no tapping and washing out of the cyst, can be looked on with complacency.



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